Raising Children to Work Hard: Altruism, Work Norms and Social Insurance

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Abstract

Children who can count on support from altruistic parents may not try hard to succeed in the labor market. Moreover, parental altruism makes withdrawal of such support non-credible. To promote work effort, parents may want to instill norms which later cause their children to experience guilt or shame associated with failure to support themselves. While social insurance pools risk across families, we show that it also creates a free-rider problem among parents in terms of norm formation. We also examine the formation of norms requiring children to support their parents financially in old age.

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1 Introduction

In recent years, the influence of norms on economic behavior has been increasingly recognized among economists. Attention has been devoted to both *ethics*, which may be regarded as internalized norms, and *social norms* which are upheld by the approval or disapproval of others. Norms are then usually regarded as exogenously given – a rather natural assumption in a short-run analysis since norms often have considerable inertia. In a long-term perspective, however, it is of interest to endogenize norms, i.e., to explain how they emerge, are upheld and change. These aspects may also be relevant when assessing the long-term effects of economic policies. While economic policies usually address economic problems taking norms as given, or more often neglecting norms altogether, policies are likely to influence norms in the long run. This may be particularly important for tax and welfare state policies. Nevertheless, long-term consequences for norms were probably seldom anticipated by the engineers of today's tax and social insurance systems. For instance, when the welfare state was dramatically expanded after World War II, few seem to have been concerned about the risk that work ethics and social norms concerning work would change in ways detrimental to the welfare state itself.

Studies of the emergence of norms have predominantly been based on an evolutionary perspective.[1] Alternatively, norms may be seen as the result of purposeful, self-interested behavior on the part of certain agents, so-called "norm senders".[2] We follow the latter approach.

The purpose of this paper is to study the formation of work norms and

[1] See e.g. Axelrod [1986], Boyd and Richerson [1985], Binmore and Samuelson [1994] and Vega-Redondo [1993].

[2] Bisin and Verdier [1998] examine the transmission of preferences for social status from altruistic parents to children; see also Hauk and Saez-Marti [1999].

their interplay with economic incentives. In particular, we examine the norm that able-bodied individuals should support themselves by working rather than living off handouts from others.[3] Obvious senders of such norms are parties that are directly or indirectly affected by the individual's work effort, such as parents, employers, co-workers and taxpayers. The ability to influence an individual's norms certainly varies among these groups. We focus on the role of altruistic parents as norm senders. Specifically, we analyze how parents' norm formation depends on factors such as parental income, wages and labor market prospects for their children, education and the generosity of the social insurance system. In the same framework, we also examine norms requiring children to provide for their parents in old age.

Altruistic parents have an interest in their children's ability and willingness to support themselves. If children fail in this respect, parents feel obliged to help them financially. Children's labor market prospects depend partly on luck and partly on their own effort, for instance in terms of investments in human capital, job search, work intensity and career ambitions. Children who can count on support from altruistic parents, should they fail to support themselves, may be tempted to free ride on their parents' altruism by exerting less effort in their working life than otherwise and, more importantly, less effort than their parents would like.[4]

Such incentive problems need not always arise; Becker's [1974] "rotten-

[3]Work norms and norms against living off transfers have been discussed in Weber [1930], Parsons [1952], Elster [1989], Moffit [1983], Lindbeck [1995], Lindbeck, Nyberg and Weibull [1999] and Stutzer and Lalive [2001].

[4] A seminal contribution on incentive problems in connection with altruism is Buchanan [1975]. Lindbeck and Weibull [1988] provide a formalization.

There is also a literature on the possibility of alleviating free riding on altruistic parents by early gifts or precommitment to bequests; for a critical discussion of the former approach, see Bruce and Waldman [1990]. The use of strategic bequests by altruistic parents has been examined in e.g. Bernheim, Shleifer and Summers [1985], Lindbeck and Weibull [1986], Wilhelm [1996] and Cremer and Pestieau [1996, 1998].

kid theorem" demonstrates that selfish children may well find it optimal to act in their altruistic parents' best interest. In the case we examine, however, incentive problems do arise. The reasons are that parental altruism limits parents' ability to precommit to an incentive scheme for children and that the possibility of transferring utility between parent and child is restricted since children's effort is a private good.[5]

Non-economic incentives embedded in individual ethics or social norms are less likely to be subject to time-inconsistency problems than are economic incentives. The reason is that norms do not require *ex post* enforcement from parents in conflict with their altruistic preferences. A work ethic is based on feelings of self-respect or guilt, depending on whether or not the individual succeeds in his working life; in case of failure children "punish themselves" so to speak. By contrast, a social norm in favor of work is upheld by the approval or disapproval of individuals outside the family, resulting in pride and shame, respectively. Social norms may function as complements to or substitutes for internalized norms.

Teaching ethics or social norms to your own children constitutes an integral part of upbringing. An important assumption in this paper is that parents are, at least to some extent, successful in their attempts to influence the preferences of their children. To instill a work ethic, parents have to make children associate positive and negative experiences with their achievements in working life. Similarly, a prerequisite for instilling social norms is that parents can *sensitize* their children to the opinion of others. This is not the

[5] It has been shown by Bergstrom [1989] that under these circumstances, the rotten-kid theorem applies only if utility is quasi-linear. (In our context this would imply risk neutrality, which is an unfortunate assumption in an analysis involving social insurance.) Lindbeck and Weibull [1988] examined the consequences of altruism when precommitment is not possible. They found that free riding then occurs not only when the child is selfish, but also when he cares about the parent.

whole story, however. Individuals outside the family must also be willing to *enforce* the social norm by expressing approval or disapproval, which in some cases may involve harassment and ostracism. But why would other individuals enforce norms if such enforcement is costly to themselves? One reason may be that individuals who do not punish norm transgressions may be subject to punishment themselves; see e.g. Kandori [1992]. Moreover, some individuals might actually take satisfaction in punishing norm violations. The cost of enforcing norms may also be regarded as an investment in future norm compliance.[6]

The risk that a child fails in the labor market, in spite of considerable effort, complicates his parents' task of providing non-economic effort incentives. This is the case both in the context of ethics and social norms. Children who fail suffer doubly: in addition to a low income, they feel guilt or shame.[7]

Altruistic parents may also instill guilt in children to influence other types of behavior than work effort. For example, even altruistic parents may be interested in receiving transfers from their children in old age, at least if children are well-to-do. An early study in this vein is Gary Becker's [1993] analysis where parents make children feel guilty if they fail to provide such support. The model we introduce is extended to cover transfers from children to parents.

It is important to recognize, of course, that parents can improve their

[6] If the reactions of others also have economic consequences for an individual, then the first condition (sensitivity to the opinions of others) may not be necessary. However, Elster [1989, p. 99], argues that social norms cannot be based on material considerations alone: "For norms to be social, they must be (a) shared by other people and (b) partly sustained by their approval and disapproval."

[7] Guilt or shame provides "effort incentives" in the same way as deductibles provide incentives for prudence in insurance markets. However, while deductibles constitute redistributions between insurance companies and policyholders, guilt or shame is not matched by any utility gains for other individuals.

children's labor market prospects by investing in education. Such investments also reduce future income transfers to children, which strengthens their effort incentives. As we shall see, education may be a complement to or substitute for instilling work norms.

The extent to which parents rely on non-economic incentives (norms) and education depends on the economic conditions facing parents and children. Important elements of the economic situation include not only parental income and labor market opportunities for children, but also the social insurance system. While social insurance is an effective device for pooling income risks among families, it may have negative consequences not only for economic incentives but also, in a long-term perspective, for norm formation. Once families are insured against adverse outcomes, parents' incentives to instill strong work norms in their children are reduced. This leads to lower effort and a reduced tax base. Thus, social insurance not only gives rise to the traditional free-riding problem for insured individuals, but may also lead to free riding in terms of norm formation. Thus, society at large also has an interest in providing effort incentives, including non-economic ones.

Intergenerational transfers and related incentive problems have also been studied in the context of other analytical frameworks. In particular, there is a literature examining intergenerational transactions in overlapping generations models and how these transfers can be sustained as equilibria in repeated games. Such equilibria are often interpreted as implicit contracts between generations; see e.g. Sandler and Smith [1976] and Rangel [1999] and references therein. The repeated games approach and our approach are perhaps best viewed as complements, as they build on quite different mechanisms of intergenerational relations.

The paper proceeds as follows. In section 2 we develop a simple model

of a family with an altruistic family head. After examining parental decisions about upbringing and transfer payments to children, we analyze how these decisions interact with children's choice of work effort. Transfers from children to parents are addressed in section 3, and in section 4 we extend the discussion to include the role of family networks and education. A social insurance system is introduced in section 5. In particular, we examine how a social insurance system affects the incentives for parents to instill work norms. In section 6 we examine the stability of social norms in favor of work. Section 7 offers some concluding remarks and possible extensions.

2 The Model

We analyze a model with two generations: parents and children. To highlight the incentive problem we assume that parents are altruistic while their children are selfish. Decisions are made in three stages. In the first stage, parents instill work norms in their children. Analytically, we represent work norms as a non-economic cost associated with failure in the labor market. In the second stage, individuals in the younger generation choose their work effort. In the labor market, they either become successful and achieve high earnings, w^h, or fail and have low earnings, w^l, where h and l correspond to success and failure, respectively. Failure can be interpreted as becoming unemployed or belonging to the working poor. In the third stage, after observing the labor market outcome, an altruistic parent with income I may choose to provide financial support to the child.

The likelihood of success or failure in the labor market depends partly on individual effort and partly on random events. Let p be the probability of becoming successful given some effort level. Assuming that p is strictly

increasing in the child's effort we can, for simplicity, assume that children choose p directly. The effort cost associated with a specific p is assumed to be given by a function $v(p)$ such that $v_p(p) > 0$. We also assume that $v(0) = 0$ and $\lim_{p\to 1} v(p) = \infty$ (Inada conditions). More specifically, we assume that $v(p) = -q\ln(1-p) \geq 0$. The parameter q measures how costly it is to increase the probability of success and may reflect labor market conditions, such as the rate of unemployment and educational opportunities. If we interpret $1-p$ as a measure of leisure, this formulation of the $v(p)$ function implies that individuals have Cobb-Douglas preferences over consumption and leisure.

For simplicity, wages are assumed to be fixed – only the probability of receiving a high or a low wage depends on effort.

The utility of the child is:

$$U_k(c_k, p, s) = \begin{cases} \ln c_k^h - v(p) & \text{with probability } p \\ \ln c_k^l - v(p) - s & \text{with probability } 1-p \end{cases} \tag{1}$$

where c_k can take two values, c_k^h and c_k^l, denoting the child's consumption in the high and low labor market outcome, respectively. The parameter s denotes the non-economic disutility (guilt or shame) of failing in the labor market.[8]

According to this formulation, the work norm is related to the labor market *outcome* for the individual. Alternatively, the work norm could be tied to the *effort* of the individual. An advantage of norms tied to effort is that no individual is then punished soleley because of bad luck. However,

[8] Non-economic incentives may, of course, also take the form of rewards that give rise to self-respect or pride. Since an analytically interesting tradeoff occurs only when the provision of incentives involves a utility cost, we normalize the utility derived from self-respect and pride to zero, which may be interpreted as the highest level of self-respect or pride that parents are able to provide.

enforcement of such norms is likely to be less reliable than for norms tied to outcome.

Enforcement of internalized work norms is based on an individual's subjective perception of whether a norm is obeyed or not. Children may thus have considerable discretion in determining whether they have violated a norm or not, for instance by defining success differently than their parents do. The scope in this respect is probably smaller for norms tied to outcomes observable by other people, since an individual's own assessment is then more likely to resemble the assessment made by others. While work ethics in the real world are likely to contain elements linked to both effort and outcomes, we confine our analysis to norms based on outcomes.

In the case of social norms, parents can be more confident that violations will actually be punished, since both the assessment as to whether the child has broken the norm and the punishment is left to others. Since it is quite difficult for outsiders to observe effort, the case for tying social norms to outcomes rather than effort is even stronger than for internalized norms.

We assume that the utility of an altruistic parent depends on his own consumption and the utility of the child in the following way:

$$U_p(c_p, c_k, p, s) = \ln c_p + \alpha U_k(c_k, p, s), \tag{2}$$

where c_p denotes the parent's consumption and α reflects the degree of parental altruism, i.e., the weight the parent attaches to the utility of the child. The parent's consumption is simply his income minus any transfer r^i he gives to the child, $c_p^i = I - r^i$, where $i \in \{h, l\}$ indicates the labor market outcome for the child. Similarly, the child's consumption is $c_k^i = w^i + r^i$, i.e., it is determined by state-dependent earnings and the transfer from the parent.

We solve the model backwards, starting with the third and second stages when parents decide on intergenerational transfers and children choose their work effort.

2.1 Choices of transfers and effort

Parents decide how much to transfer after having observed their child's performance in the labor market. Parents choose r^i to maximize utility, as expressed in (2), subject to $r^i \geq 0$. Recalling that $c_p^i = I - r^i$ and $c_k^i = w^i + r^i$,the first-order condition for the parent's choice of r^i is

$$\frac{dU_p}{dr^i} = -\frac{1}{I - r^i} + \frac{\alpha}{w^i + r^i} \leq 0.$$

The optimal transfer depends on the parent's degree of altruism α, income I and the earnings of the child w, and is given by $r^i = \max\left\{\left(\alpha I - w^i\right)/\left(1+\alpha\right), 0\right\}$, where $i \in \{l, h\}$.

Three cases can occur. If a parent has a low income or is not very altruistic, so that $\alpha I < w^l$, then $r^l = r^h = 0$. If instead $w^l < \alpha I < w^h$, transfers are offered only in bad labor market outcomes. Third, if $\alpha I > w^h$, then parents support children financially also in good outcomes. Inserting r^i into the expressions for the agents' consumption yields:

$$\begin{aligned} c_k^i &= \max\left\{\tfrac{\alpha}{1+\alpha}(I + w^i), w^i\right\} \\ c_p^i &= \min\left\{\tfrac{1}{1+\alpha}(I + w^i), I\right\}. \end{aligned} \tag{3}$$

Let $\tilde{c}$ be the ratio between consumption in the good and the bad state, the "consumption ratio" for short,

$$\tilde{c}_p = c_p^h / c_p^l \qquad \tilde{c}_k = c_k^h / c_k^l. \tag{4}$$

Note that if $r^i > 0$ then family income, $I + w^i$, is shared between the parent and the child in the proportions $1/(1+\alpha)$ and $\alpha/(1+\alpha)$, respectively. (This follows from logarithmic preferences.) Thus, if children receive transfers in both states, then $\tilde{c}_p = \tilde{c}_k$. If the child only receives support in the bad outcome, then $\tilde{c}_p < \tilde{c}_k$.

Given anticipated transfers and non-economic incentives, the child chooses p to maximize expected utility,

$$E[U_k(c_k, s)] = p \ln c_k^h + (1-p)\left[\ln c_k^l - s\right] - v(p). \tag{5}$$

The first-order condition for the child's choice of p is:

$$\ln \tilde{c}_k + s - v'(p) \leq 0 \quad \text{or} \quad \ln \tilde{c}_k + s - \frac{q}{1-p} \leq 0. \tag{6}$$

Equation (6) says that a positive effort level requires the marginal benefit of exerting effort, $\ln \tilde{c}_k + s$, to be equal to the marginal effort cost, $v'(p)$, of achieving p. (The marginal benefit of a higher p equals the difference in utility between the states, $\ln c_k^h - (\ln c_k^l - s) = \ln \tilde{c}_k + s$.)

We are primarily interested in cases where children exert at least some effort. Thus, we assume that q is so low that children who receive transfers in both labor market outcomes choose a $p > 0$, even without non-economic incentives, i.e., $q < \ln(I+w^h)/(I+w^l)$. This ensures that condition (6) holds with equality.

2.2 Norm formation (upbringing)

While altruistic parents cannot credibly threaten to withhold transfers as a means of providing incentives for effort, we assume that they can influence the child's work effort through upbringing. In the case of work ethics,

parents achieve this simply by choosing the level of non-economic incentives s. In the case of social norms, parents instead make their children more or less *sensitive* to the disapproval of others. For simplicity we abstract from double standards and assume that only individuals who adhere to the norm themselves will disapprove when others break it. Furthermore, we assume that each individual's disapproval carries the same weight for the violator of the norm, so that the total disapproval is directly proportional to the share of the population that succeeds in the labor market, π. Letting $\bar{s}$ measure the individual's sensitivity to disapproval, the utility cost of failing on the labor market is now given by $\bar{s}\pi$ rather than by s. Since parents take the aggregate labor market outcome π as given, choosing $\bar{s}$ and s is effectively the same decision. The subsequent analysis of norm formation is therefore cast in terms of s.

The parent chooses s to maximize expected utility taking the child's effort response, implicitly given by (6), into account. The expected utility of the parent is simply the probability weighted average of the parent's utility in the two states,

$$E[U_p(c_p, c_k, s)] = p(s) \ln c_p^h + (1 - p(s)) \ln c_p^l + \alpha E[U_k], \tag{7}$$

where we write $p(s)$ to emphasize the direct link between s and the child's choice of p. The first-order condition for the parent's choice of s is

$$\frac{dE\left[U_p\right]}{ds} = \ln \tilde{c}_p \frac{\partial p}{\partial s} + \alpha \left(\frac{\partial E\left[U_k\right]}{\partial s} + \frac{\partial E\left[U_k\right]}{\partial p} \frac{\partial p}{\partial s} \right) \leq 0, \tag{8}$$

where $\partial E\left[U_k\right]/\partial p = 0$, since condition (6) is assumed to hold with equality. Moreover, it follows implicitly from the same condition that $\partial p/\partial s = 1/v''(p) = (1-p)^2/q$. As expected, work effort increases along with the

strength of the guilt or shame associated with failure. Next, since $\partial E\left[U_k\right]/\partial s = -(1-p)$, condition (8) simplifies to

$$\ln \tilde{c}_p \frac{\partial p}{\partial s} - \alpha\left(1-p\right) \leq 0 \qquad \text{or} \qquad \frac{\ln \tilde{c}_p}{\alpha} - \frac{q}{1-p} \leq 0. \tag{9}$$

An explicit expression for the parents' optimal choice of s can be derived by combining (6) and (9): [9]

$$s = \max\left\{\ln \tilde{c}_p/\alpha - \ln \tilde{c}_k, 0\right\}. \tag{10}$$

Parents with low incomes or weak altruism provide only small or no transfers to children in the bad state (so that $c_p^h \approx c_p^l$, and thus $\ln \tilde{c}_p \approx 0$). Thus the child's effort incentives are not seriously distorted. When the child faces the full economic consequences of this effort decision, there is no point in making the child feel any guilt or shame associated with failure; it can only harm the child and does not benefit the parent. Hence, parents then set $s = 0$. (In this case p is implicitly defined by condition (6).)

More affluent parents provide higher transfers in the bad state, thereby reducing children's incentives for effort. In this case expressions (3) and (4) imply that r^l, and thus also $\tilde{c}_p$, increase in parental income while $\tilde{c}_k$ decreases. However, a parent will only choose $s > 0$ if the incentive distortion is sufficiently large. (In this case p is implicitly defined by condition (9).)[10]

[9] It is straigthforward to show that $d^2E[U_p]/ds^2$ reduces to

$$\frac{\partial E[U_p]}{\partial p}\frac{\partial[\partial p/\partial s]}{\partial p}\frac{\partial p}{\partial s} + \alpha\frac{\partial^2 E[U_k]}{\partial p \partial s}\frac{\partial p}{\partial s}.$$

This equals $-\alpha/v''(p)$ when $dE[U_p]/ds = 0$, i.e. $E[U_p]$ is strictly quasi-concave in s.

[10] Note that the induced p is lower than that parents would opt for if they could control p directly. In the latter case there is no reason to make children feel guilty because of failure, which would be due solely to bad luck. Maximization of the parent's expected

Not surprisingly, there exists a threshold income level $\hat{I}$ above which the transfers offered by the parent are sufficiently distortive to motivate the use of non-economic incentives. Formally,

Lemma 1 *There exists a unique threshold income* $\hat{I} \in (w^l/\alpha, w^h/\alpha)$ *such that* $s = 0$ *for* $I \leq \hat{I}$ *and* $s > 0$ *for* $I > \hat{I}$.

Proof. The threshold income $\hat{I}$ is the solution to $\tilde{c}_p = (\tilde{c}_k)^\alpha$. Both $\tilde{c}_p$ and $\tilde{c}_k$ are continuous in I, and for $\alpha I \leq w^l$ it follows that $\tilde{c}_p = 1 < (w^h/w^l)^\alpha = (\tilde{c}_k)^\alpha$ so $s = 0$. If $\alpha I \geq w^h$, then $\tilde{c}_p = \tilde{c}_k$ which implies that $s > 0$. By continuity a threshold $\hat{I}$ exists, and since $\tilde{c}_p$ is strictly increasing and $\tilde{c}_k$ strictly decreasing in I for $I \in (w^l/\alpha, w^h/\alpha)$, it is unique. ■

Let us now examine how the behavior of parents and children is influenced by changes in parameters such as parents' income and altruism, wages and the return to labor market effort. The effects on the parents' use of non-economic incentives are summarized in the following proposition.

Proposition 1 *(i) If* $I \in (\hat{I}, w^h/\alpha)$*, then* s *increases in* I *and* α *while it decreases in* w^h *and* w^l*. (ii) If* $I > w^h/\alpha$*, then* s *decreases in* I*,* α *and* w^l *while it increases in* w^h*. (iii) Changes in* q *have no effect on* s**.**

Proof. See appendix. ■

Not only higher parental income but also increased altruism result in higher transfers. If the resulting incentive distortion is sufficiently large,

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utility, given that $s = 0$, yields,

$$\ln \tilde{c}_p + \alpha \left(\ln \tilde{c}_k - \frac{q}{1-p} \right) = 0.$$

The p implied in this special case exceeds the p chosen by the child (equation (6)).

parents will respond by raising s. Moreover, a higher w^l makes the bad outcome more acceptable and, as a result, parents will reduce both r^l and s. By contrast, a higher w^h increases the child's effort incentives, implying that a lower s suffices to implement the p preferred by the parent. (The preferred p is independent of w^h when (9) binds and $r^h = 0$.)

The effects on s are somewhat different when parents' income and/or altruism is so high that they offer transfers in both outcomes, in which case $\tilde{c}_p = \tilde{c}_k = (I + w^h)/(I + w^l)$. Now, if parents raise transfers because their income has increased, the deterioration of work incentives is mitigated since parents provide transfers in both outcomes. Moreover, parents become less concerned about the fate of their children in the labor market when the children's contribution to family income becomes relatively less important. The net effect is that parents will choose a smaller s.

Stronger parental altruism increases the child's consumption in the same proportion in both outcomes, which leaves the child's economic effort incentives unchanged. However, it also makes the parent less willing to subject the child to non-economic punishment and parents will choose a lower s. The effect of changes in w^l remains the same as before, but the effect of a change in w^h is different. Since parents will reduce r^h in response to a higher w^h children only receive part of the increased return on effort. They will therefore choose a p which is too low from the parents' point of view, which causes parents to stimulate effort by raising s.

In our model, q does not affect the parents' choice of s. This follows directly from (10). Parents choose s to equalize their marginal benefit and cost due to the child's effort. They are not concerned with the success probabilities *per se*.

The effects on children's choice of p are summarized in proposition 2.

Proposition 2 *(i) For* $I \in (w^l/\alpha, \hat{I})$ *and* $I > w^h/\alpha$*, the equilibrium* p *decreases in* I*,* α *and* w^l *but increases in* w^h*. (ii) If* $I \in (\hat{I}, w^h/\alpha)$*, then* p *increases in* I *and decreases in* w^l*. Changes in* α *have an ambiguous effect, and changes in* w^h *have no effect on* p*. (iii). A higher* q *leads to a lower* p *but has an ambiguous effect on* $v(p)$*.*

Proof. See appendix. ■

The results in the first part of the proposition are intuitively straightforward. Higher parental income and increased altruism lead to higher transfers and lower effort incentives for the child. While a higher wage in the bad outcome results in lower effort, a higher wage in the good outcome stimulates effort. (A higher w^l will result in a lower parental transfer, but this only partly offsets the negative effect on effort.) The second part, which reflects the case where parents use non-economic incentives, but provide transfers only in the bad outcome, is perhaps less intuitive. In this case higher parental income increases the consumption ratio for parents. Parents therefore increase s in order to raise p. On the one hand, increased altruism raises the consumption ratio of parents, which makes them prefer higher effort. On the other hand, parents would now prefer to reduce the non-economic punishment. The net effect on p is ambiguous. Since changes in w^h do not affect the parents' consumption in this case, their preferred p remains unchanged.

Figure 1 illustrates how the parent's choice of s and the child's choice of p depend on parental income I in a parameterized example. The parameter values in the example are $w^h = 2, w^l = 1, \alpha = 0.75$ and $q = 0.1$. In the figure, the threshold income $\hat{I}$ (below which $s = 0$) is 2.48. For incomes above this threshold, parents choose $s > 0$ and s increases in income, up to $I = 8/3 (= w^h/\alpha)$. Above this income level s gradually declines in income.

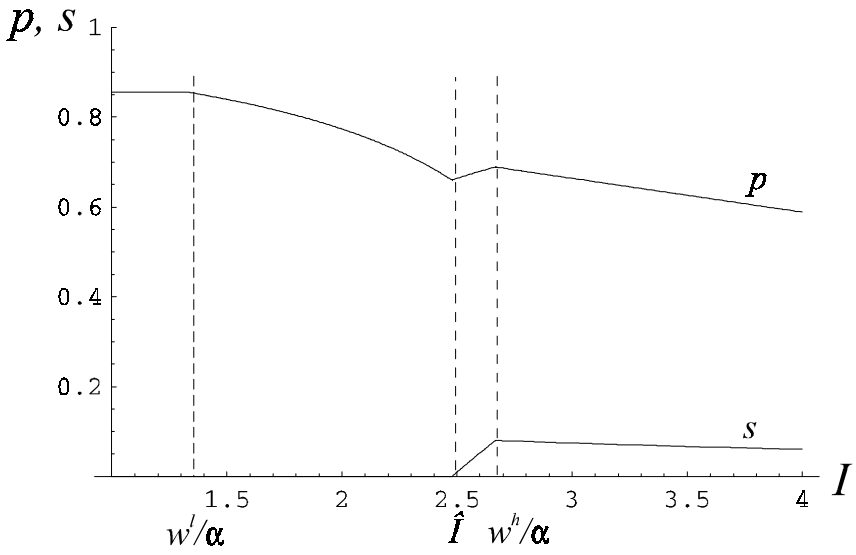

Figure 1:

3 Education

So far we have assumed that parents can only influence their children's effort via norm formation. In reality, parents may also promote children's success in the labor market by, for instance, investing in their education. A pertinent question is whether the option to invest in education will change the work ethic parents teach their children. Specifically, are investments in education and work norms substitutes or complements?

One implication of the analysis in the preceding section is that the labor market performance of children who receive transfers in both outcomes decreases in parental income. The reason is that higher incomes prompt parents who are already well-off to offer higher transfers and instill laxer work norms, thereby weakening their children's economic and non-economic incentives for effort. While there are real-world counterparts to Thomas Mann's saga of the decline of the Buddenbrooks dynasty, we do not generally expect children from rich families to be less successful than others. For instance, investments

in education may offset the disincentive effects.

The direct effect of investments in education e can be viewed as an increased probability of success for a given effort level or, equivalently, as a reduction in the effort cost required to attain a certain probability of success. In line with the latter interpretation we let the effort cost be a function $v(p, e)$ such that $v_2(p, e) < 0$ where index 2 denotes the derivative with respect to the second argument. As before, we assume that it is infinitely costly to be successful with full certainty. Investments in education also influence norm formation and the choice of work effort simply because education is costly. The effect is the same as in the case of a reduction in parental income. Parents will pass on part of the cost of education to their children in the form of reduced transfers, thereby increasing the economic effort incentives for children.

How does increased spending on education affect norm formation? Expression (10) states that the strength of the work norm is determined entirely by the consumption ratios for parents and children and the parents' altruism. It does not depend on how education influences the effort cost. Thus the effect on norm formation of increased spending on education is exactly the opposite of that of higher parental income, stated in proposition 1.

This means that if a parent offers transfers in both outcomes, the "Buddenbrooks case", then increased spending on education gives rise to stronger non-economic incentives. Thus, education and non-economic incentives are complements. By contrast, if parents use non-economic incentives but offer transfers only in the bad outcome, then education and work norms are substitutes.

As before, the child's effort choice is determined either by condition (6) or condition (9) depending on whether the parent provides non-economic

incentives or not. Condition (6) depends on the child's consumption ratio and the marginal disutility of effort. Condition (9) depends on the parent's consumption ratio and the child's responsiveness to non-economic incentives, which depends on the effort cost, $\partial p/\partial s = 1/v_{11}(p, e)$. Thus, in both cases the effect of education on the effort cost matters.

If a parent does not use non-economic incentives, then a sufficient condition for education to improve the child's labor market prospects is that education does not increase the *marginal* disutility of effort. If a parent instills work norms in the child, then the effect of education on p depends on how education affects the first term in condition (9), $\ln \tilde{c}_p \partial p/\partial s$. Provided that education does not decrease the child's responsiveness to non-economic incentives, i.e., $v_{112}(p, e) \leq 0$, education gives rise to a higher p as long as the parent's marginal valuation of a higher p, $\ln \tilde{c}_p$, does not decrease in e. The only case where $\partial \ln \tilde{c}_p/\partial e < 0$ is when parents provide transfers only in the bad labor market outcome. How investments in education affect p is then determined by the relative strength of these opposing effects.

When discussing the comparative static effects of investments in education on norm formation and the labor market prospects for the child, we did not address the investment decision *per se*. Parents have to consider investments in education in conjunction with norm formation, which increases the complexity of the problem. Here, we merely state the first-order condition for investments in education to illustrate the tradeoff faced by parents.

A parent's incentives to invest in his child's education differs depending on whether the child receives no transfers, transfers only in the bad outcome or in both outcomes. However, for all cases, the first-order condition for the

parent's choice of e can, after some simplification, be expressed as

$$\frac{\partial E[U_p]}{\partial e} = -\left(p\frac{1}{c_p^h} + (1-p)\frac{1}{c_p^l}\right) + \frac{\partial p}{\partial e}\ln\tilde{c}_p - \alpha\frac{\partial v(p,e)}{\partial e} \leq 0. \qquad (11)$$

Thus, there is a tradeoff between consumption forsaken by parents and children (the first term) and two beneficial effects. The second term reflects the benefit of better labor market prospects and the last term the reduction in the effort cost. The size of the last two effects, of course, depends on exactly how education affects the effort cost. This also influences to what extent the option to invest in education may counteract the "Buddenbrooks effect".

In addition to education there are other factors that may counteract the "Buddenbrooks effect". For instance, high-income parents often have social networks that facilitate children's labor market success. Furthermore, children who become accustomed to a high level of consumption may raise their aspiration level by e.g. increasing the weight on consumption utility relative to that on the disutility of effort.

The effect high-income parents' superior social networks on the child's probability of succeeding on the labor market can be modeled as a reduction in the disutility of effort in the same way as for education above. Likewise, the possibility that children's aspiration level with respect to consumption may increase in parental income can be analyzed in the same fashion. Specifically, the reduction in children's effort cost due to social network effects can be reinterpreted a rise in the aspiration level with respect to consumption, i.e. as an increased preference for consumption relative to leisure.

One important difference, however, is that investments in education also affect effort incentives via the consumption ratios. Educational investments may therefore have a stronger impact on the labor market prospects than do social networks.

For simplicity, we henceforth abstract from investments in education, social networks and aspiration levels in the formal analysis. These issues are alluded to, however, in connection with social insurance.

4 Transfers from Children to Parents

So far we have only considered transfers from altruistic parents to children. Work norms then served to mitigate the disincentive effects generated by parental transfers. In cases with low parental income, weak altruism or high incomes for children, the intergenerational transfers are zero. But, if children are sufficiently well off, even altruistic parents would actually favor transfers in the other direction, from children to parents. However, selfish children will not voluntarily provide for their parents. Parents may therefore try to instill norms in favor of supporting parents in old age. We extend our analysis to encompass this case.

As mentioned in the introduction, Becker [1993] has analyzed a model where parents can make children feel guilty lest they provide for their parents in old age. Our approach is similar in spirit to Becker's. However, we choose a slightly different formalization more in line with our analysis. First, by contrast to Becker we assume that instilling norms entails no resource cost for parents. Second, for simplicity, we use a binary formulation of norms – so that children either feel guilt or not, depending on whether they satisfy their parents' transfer requirements.

We assume that parents can make children experience a disutility σ^i if the transfer to the parent in state i is below a certain level, g^i. A child prefers

giving g^i to the parent, rather than keeping the money for himself, if

$$\ln(w^i - g^i) - v(p) \geq \ln w^i - v(p) - \sigma^i. \tag{12}$$

Thus the minimum σ^i required for g^i is $\sigma^i = -\ln(1 - g^i/w^i)$. It follows that to increase g^i, a parent must raise σ^i by $\partial\sigma^i/\partial g^i = 1/(w^i - g^i) = 1/c_k^i$. In other words, to induce higher transfers, parents must raise the disutility of failing to provide for them in old age at a rate equal to the child's marginal utility of money, $1/c_k^i$.

Transfers from children to parents, just like transfers in the other direction, affect the consumption ratios and thus children's choice of work effort. Using (6) it is straightforward to show that

$$\frac{\partial p}{\partial g^h} = -\frac{1}{c_k^h v''(p)} < 0 \qquad\qquad \frac{\partial p}{\partial g^l} = \frac{1}{c_k^l v''(p)} > 0. \tag{13}$$

Under what circumstances, then, would altruistic parents want to instill norms to secure transfers from their children to themselves? The first-order conditions for the parents' choice in this respect are:

$$\begin{aligned} \tfrac{\partial EU_p}{\partial g^h} &= -\ln \tilde{c}_p \tfrac{1}{c_k^h v''(p)} + p\tfrac{1}{c_p^h} - \alpha p \tfrac{1}{c_k^h} \leq 0 \\ \tfrac{\partial EU_p}{\partial g^l} &= \ln \tilde{c}_p \tfrac{1}{c_k^l v''(p)} + (1-p)\tfrac{1}{c_p^l} - \alpha(1-p)\tfrac{1}{c_k^l} \leq 0 \end{aligned} \tag{14}$$

where the last terms in both conditions reflect the child's disutility of lower consumption: $1/c_k^i$.[11]

If parents require no transfers from their children, then parents' consumption is the same in both states. The above first-order condition with respect

[11] It can be shown that EU_p is quasi-concave in both g^h and g^l and that if both conditions bind, then the second-order condition for a maximum holds.

to g^h can then be simplified to $1/I - \alpha/w^h \leq 0$. Thus the threshold for $g^h > 0$ is $\alpha I < w^h$. The intuition is straightforward. The less altruistic the parents and the higher the children's income relative that of their parents, the more inclined are parents to instill norms in favor of providing for them in old age. Moreover, it is easy to see that if parents require transfers from children in bad labor market outcomes, $g^l > 0$, then they will certainly require transfers in good outcomes, $g^h > 0$.

Since transfers to parents in good states function as tax wedges, children's effort incentives are reduced. Parents can compensate for this, however, by instilling work norms. To see whether parents will use work norms in conjunction with norms in favor of support in old age, it is useful to decompose the first-order condition for the choice of g^l in the following way:

$$\frac{\partial E[U_p]}{\partial g^l} = \frac{1}{c_k^l}\Bigg[\underbrace{\ln \tilde{c}_p \frac{1}{v''(p)} - \alpha(1-p)}_{FOC \text{ for } s>0.} + (1-p)\frac{c_k^l}{c_p^l}\Bigg] \leq 0. \qquad (15)$$

Hence, if parents were to instill work norms according to (9), then the above expression would be strictly positive. This implies that it would be in the parents' to require their children to support them even in bad outcomes. In fact, (15) implies that parents will not instill work norms when they require transfers from children.

To summarize, the threshold incomes at which parents would instill norms in favor of children supporting them coincide with those for transfers from parents to children. Requiring children to support parents in good labor market outcomes reduces the children's work incentives. Requiring support from children in the bad outcome stimulates work effort and dominates work norms as an incentive mechanism.

5 Social Insurance

Since parents cannot insure against fluctuations in family income, idiosyncratic risks motivate risk pooling across families, for instance through social insurance. However, a social insurance system introduces a link between the decisions of a single family and the economy as a whole via the tax base, which is affected by other families' decisions about upbringing and work effort. As a result, a social insurance system may give rise to free-riding behavior not only in terms of work effort but also concerning norm formation.

Here, we assume that social insurance consists of a tax-benefit pair $\{t, B\}$, where t is a proportional income tax levied on all children and B is a fixed benefit provided to children who do not succeed on the labor market.[12] Note that since B is only paid out in bad labor market outcomes, the work norm in this context can be interpreted as a social norm against accepting transfers from the government instead of being self-reliant. It is assumed in what follows that social insurance is less than complete, so that the consumption level of someone who fails in the labor market is strictly lower than that of a successful individual.

We assume that both parents and children take taxes and benefits as given when they make their individual choices, i.e., they do not perceive their choices as influencing the labor market outcome on the level of the overall population. However, we require parents' expectations concerning the aggregate outcome on the labor market to be consistent with announced policies (rational expectations).

Whether a policy balances the social insurance budget depends on the resulting aggregate labor market outcome, π. The social insurance budget is

[12] The qualitative results of our analysis would not change if the tax base were extended to include parental income.

balanced in expectation if

$$t\left[\pi w^h + (1-\pi)\, w^l\right] = (1-\pi)\, B. \tag{16}$$

The budget-balancing transfer can thus be expressed as $B = t[w^l + \frac{\pi}{1-\pi} w^h]$ and is clearly strictly increasing in π and t. The aggregate labor market outcome, however, depends on the tax and benefit levels which influence individual decision-making via their effect on consumption. With social insurance, children's consumption is given by:

$$\begin{aligned} c_k^h(t,B) &= (1-t)\, w^h + r^h(t,B) \\ c_k^l(t,B) &= (1-t)\, w^l + r^l(t,B) + B. \end{aligned}$$

Parents choose transfers so that $r^h(t,B) = \max\left\{\frac{1}{1+\alpha}\left(\alpha I - (1-t)\, w^h\right), 0\right\}$ and $r^l(t,B) = \max\left\{\frac{1}{1+\alpha}\left(\alpha I - (1-t)\, w^l - B\right), 0\right\}$. Consequently, the equilibrium consumption levels corresponding to (3) are now

$$\begin{aligned} c_k^i(t,B) &= \max\left\{\tfrac{\alpha}{1+\alpha}\left(I + y^i\right), y^i\right\} \\ c_p^i(t,B) &= \min\left\{\tfrac{1}{1+\alpha}\left(I + y^i\right), I\right\}, \end{aligned} \tag{3'}$$

where $i \in \{l,h\}$ and $y^h = (1-t)\, w^h$ and $y^l = (1-t)\, w^l + B$. Expressions $y^h$and y^l reflect children's disposable income before transfers from parents in the good and the bad labor market outcome, respectively.

Since both parents and children take $\{t,B\}$ as given, the conditions determining children's effort choice and parents' choice of s are, as before, given by conditions (6) and (9), though the consumption ratios now depend on social insurance: $\tilde{c}_p\left(t,B\right)$ and $\tilde{c}_k\left(t,B\right)$. The equilibrium s is still given by expression (10) with the same proviso. Note that the consumption ratios strictly decrease in π, since the budget-balancing benefit received in bad outcomes,

B, strictly increases in π. Consequently, individual effort and hence, success probabilities, decrease in π. Since π is the sum of the individual success probabilities in the population, this observation ensures that for any tax rate there exists a unique fixed point in π and a corresponding budget-balancing benefit. Of course, if the tax rate t is above a certain level, then there is a degenerate equilibrium where children exert no effort and they all fail in the labor market. Formally,

Proposition 3 *For any tax rate t, there exists a unique budget-balancing π^*. For sufficiently low tax rates $\pi^* > 0$.*

Proof. See appendix. ■

Note that the negative relation between the consumption ratios and π does not depend on parental income, altruism or whether different children face different labor market conditions, i.e., different q. Proposition 3 does not require families to be identical in these respects.

What, then, are the effects of social insurance on aggregate outcomes and individual choices? Will parents compensate for reduced effort incentives by increasing s? Will the role of labor market conditions, q, change when there is a social insurance system? The following proposition addresses these issues.

Proposition 4 *For sufficiently low t (such that $\pi^* > 0$), the proportion that succeeds on the labor market π decreases in t and q. The strength of non-economic incentives s decreases in t and increases in q if $r^h > 0$. If $r^h = 0$ the effect on s cannot be signed in either case.*

Proof. See appendix. ■

The intuition is the following. As already mentioned, social insurance lowers the preferred p for both parents and children. Since the cost of failure

is then partly borne by other individuals, social insurance would be expected to make parents reduce their reliance on non-economic incentives, s. But in the case where parents only offer transfers in the bad labor market outcome, this relation does not necessarily hold. The reason is that more generous social insurance arrangements may reduce children's effort incentives more than parents would like. Parents may then strengthen the non-economic incentives to moderate the decline in p.

Regardless of whether social insurance induces an individual parent to instill stronger or weaker work norms in his own children, he would prefer that other parents instill stronger work norms in their own children, since that would increase the tax base. Thus social insurance results in free-riding behavior among parents in terms of upbringing.

In section 2, it was shown that an increase in q lowers p but does not affect the parents' choice of s. With social insurance, this no longer holds. As in section 2, a higher q results in a lower π, but in this case the tax base will shrink thereby necessitating a reduction in B. This indirectly increases the consumption ratios which leads to a higher s, at least if parents offer transfers in both labor market outcomes.

How would the analysis of social insurance change if education were taken into account? Social insurance cushions bad labor market outcomes and thus reduces both the incentive to invest in education and the willingness of parents to instill work norms in their children.

If policymakers regard lower investments in education as undesirable, a natural policy response might be for the government to subsidize and/or provide education. In this sense social insurance and education subsidies may be regarded as complementary policy measures. However, if subsidies are financed by income taxes, then the positive effect of the subsidy on invest-

ment in education is counteracted and work incentives are weakened. To determine the equilibrium effect on the aggregate labor market outcome it is also necessary to consider the indirect effect on norm formation.

6 Stability of Social Norms with Social Insurance

When the strength of a norm depends on the number of individuals willing to enforce it, as may be the case for social norms, then the norm may be unstable. The reason is that if failure in the labor market becomes more widespread, the perceived non-economic cost of failing declines, thereby further eroding effort incentives and augmenting the frequency of failure in the labor market further. Below we examine the stability of a social norm in favor of work.

Recall that individual parents do not expect their own choices to influence the outcome on the level of the overall population. Thus they take the aggregate labor market outcome π as given. As before, children's choice of effort is determined by condition (11) given their expectations about $\{t, B\}$ and π, except that s is now replaced by $\bar{s}\pi$. Parents choose the sensitivity to disapproval so that

$$\ln \tilde{c}_p\left(t, B\right) \frac{\partial p}{\partial \bar{s}} - \alpha\left(1-p\right)\pi \leq 0. \tag{9'}$$

Since now $\partial p/\partial \bar{s} = \pi/v''(p)$ this condition is equivalent to (9), i.e., parents simply choose $\bar{s}$ so that $\bar{s}\pi$ equals the optimal s in the preceding analysis. Consequently, the implemented effort level remains the same as before. In fact, the only difference is that the present equilibrium is supported by the

disapproval of outside agents. However, this difference may influence the *stability* of the equilibrium. The reason is that the strength of the norm, $\bar{s}\pi$, is by assumption related to the number of agents who adhere to it. Sensitivity to the opinion of others, $\bar{s}$, is likely to be a stable character trait, at least in the short run. By contrast, the expected labor market outcome, π, may well change in the short run because of anticipated changes in labor market conditions, q.

A fall in π weakens the strength of the work norm and reduces individual work effort, which in turn accentuates the fall in π. Thus a small change in π could potentially make the equilibrium unstable. Below we state a sufficient condition for local stability.[13]

Proposition 5 *If children take policies* $\{t, B\}$ *and* $\bar{s}$ *as given, then equilibria such that* $p > 1/2$ *for all children are locally stable.*

Proof. See appendix. ■

The property that bad labor market outcomes reduce the strength of a social norm concerning work corresponds to the common notion that failing to support oneself by work is less shameful if many others are in the same situation. The implications of this mechanism were examined by Lindbeck, Nyberg and Weibull [1999], who discuss the individual's choice of whether to work or live off benefits as well as his voting behavior with respect to the government's tax and benefit policies. In a sense, this paper may be regarded as an attempt to create a micro foundation for that paper.

[13] We have assumed that social norms are enforced only by those who obey them. The discussion here, however, suggests that double standards could be socially useful in that they stabilize the enforcement of norms. But if those who condemn norm breakers are suspected of not adhering to the norm themselves, then its enforcement is likely to be weakened.

7 Concluding Remarks

We have studied how work norms are formed in the interaction between parents and children, with the former as norm senders. The analysis covers both norms which are internalized (the work ethic) and non-internalized (social norms concerning work), upheld by the approval and disapproval of others.

Children who can count on support from altruistic parents have weaker incentives to succeed in the labor market than others. Parental altruism makes withdrawal of such support non-credible. The role of work norms in our analysis is to solve this credibility problem. The use of work norms has been shown to depend on factors such as wages, parental income and the social insurance system. If children have relatively high incomes and parents' altruism is rather low, then parents may want to instill norms in favor of supporting parents in old age. Even though this may reduce children's incentives for work effort we find that work norms will not be used in conjunction with norms in favor of supporting parents in old age.

We also examined how social insurance influences norm formation in the context of our model. Social insurance creates two related free-riding problems. In addition to the traditional free-riding problem in terms of reduced work effort, incentives also arise for parents to free ride on each other by instilling weaker work norms in their children. As a result, more generous social insurance leads to weaker economic as well as non-economic incentives for work effort.

When the strength of a norm depends on the number of individuals willing to enforce it, as may be the case for social norms, then the norm may be unstable. The reason is that if failure in the labor market becomes more widespread, the perceived non-economic cost of failing declines, thereby further eroding effort incentives and augmenting the frequency of failure in the

labor market further. We examine sufficient conditions for stability of a social norm in favor of work.

The purpose of the paper has been to develop an analytical framework for thinking about the formation of work norms and their interaction with economic incentives. The model also generates a number of – at least potentially – testable predictions. One example is that the model implies a certain relation between parental income and norm formation as illustrated in Figure 1. Increased altruism obviously leads to higher transfers from parents to children. A less trivial implication is that the effect of altruism on norm formation depends on parental income. Specifically, increased altruism causes "middle-income" parents to instill harsher norms while "rich" parents would opt for laxer work norms. Similarly, the model implies that the relation between investment in education and norm formation also depends on parental income. On a more aggregate level the model implies a certain relation between the generosity of the social insurance system and attitudes toward living off benefits.

While the intensity of work norms and altruism can, in principle, be measured in survey studies of attitudes, good data of this kind currently appear to be quite scarce. Both cross-section data, e.g. for countries with different social insurance schemes, and time-series data could shed light on the questions raised here.

In this paper we have assumed that parents are the only norm senders. Historically, institutions such as the school, the church and the military have also been important norm senders. Schools and the military have been more instrumental in *establishing* work norms than in enforcing them. Since the influence of the church customarily extended over an individual's life span, it has been influential in both respects. Traditionally such institutions have

commanded authority and credibility in these matters and reached a large fraction of the population. Moreover, involvement or membership has often been compulsory. Since these institutions already exist for other purposes, the formation of norms in favor of work can be executed at little extra cost for such institutions.

Research on work norms would benefit from better empirical measurements of such norms and their potential determinants. It would also be useful to study other norm senders than the family.

References

[1] Axelrod, R., "An Evolutionary Approach to Norms," *American Political Science Review*, 80, 1986, 1095-111.

[2] Becker, G., "A Theory of Social Interactions," *Journal of Political Economy*, 82, 1974, 1063-1093.

[3] Becker, G., "Nobel Lecture: The Economic Way of Looking at Behavior," *Journal of Political Economy*, 101, 1993, 385-409.

[4] Bergstrom, T., "A Fresh Look at the Rotten Kid Theorem - and Other Household Mysteries," *Journal of Political Economy*, 97, 1989, 1138-1159.

[5] Bernheim, B. D., A. Shleifer and L. H. Summers, "The Strategic Bequest Motive," *Journal of Political Economy*, 93, 1985, 1045-1076.

[6] Binmore, K. and L. Samuelson, "An Economist's Perspective on the Evolution of Norms," *Journal of Institutional and Theoretical Economics*, 150, 1994, 45-63.

[7] Bisin, A. and T. Verdier, "On the Cultural Transmission of Preferences for Social Status," *Journal of Public Economics*, 70, 1998, 75-97.

[8] Boyd, R. and P. Richerson, *Culture and the Evolutionary Process*. Chicago: University of Chicago Press, 1985.

[9] Bruce, N. and M. Waldman, "The Rotten-Kid Theorem Meets the Samaritan's Dilemma," *Quarterly Journal of Economics*, 105, 1990, 155-165.

[10] Buchanan, J. "The Samaritan's Dilemma," in *Altruism, Morality and Economic Theory*, E. Phelps (ed.), New York: Russel Sage Foundation, 1975, 71-85.

[11] Cremer, H. and P. Pestieau, "Bequests as an 'Discipline Device'," *Journal of Population Economics*, 9, 1996, 405-414.

[12] Cremer, H. and P. Pestieau, "Delaying Inter Vivos Transmissions Under Asymmetric Information," *Southern Economic Journal*, 65, 1998, 322-330.

[13] Elster, J., *The Cement of Society: A Study of Social Order*, Cambridge: Cambridge University Press, 1989.

[14] Hauk, E. and M. Saez-Marti, "On the Cultural Transmission of Corruption", Working Paper 392, Department of Economics and Business, Universitat Pompeu Fabra, Barcelona, 1999.

[15] Kandori, M., "Social Norms and Community Enforcement," *Review of Economic Studies*, 59, 1992, 63-80.

[16] Lindbeck, A., "Welfare-State Disincentives with Endogenous Habits and Norms," *Scandinavian Journal of Economics*, 97(4), 1995.

[17] Lindbeck, A. and J. Weibull, "Intergenerational Aspects of Public Transfers, Borrowing and Debt," *Scandinavian Journal of Economics*, 1, 1986, 239-267.

[18] Lindbeck, A. and J. Weibull, "Altruism and Time Consistency: The Economics of Fait Accompli," *Journal of Political Economy*, 96, 1988, 1165-1182.

[19] Lindbeck, A., S. Nyberg and J. Weibull, "Social Norms and Economic Incentives in the Welfare State," *Quarterly Journal of Economics*, 114, 1999, 1-35.

[20] Moffit, R., "An Economic Model of Welfare Stigma," *American Economic Review*, 73, 1983, 1023-1035.

[21] Parsons, T., *The Social System*. London: Tavistock Publications, 1952.

[22] Stutzer, A. and R. Lalive, "The Role of Social Work Norms in Job Searching and Subjective Well-Being," mimeo, Institute for Empirical Research in Economics, University of Zurich, 2001.

[23] Weber, M., *The Protestant Ethic and the Spirit of Capitalism*, Harper Collins Academic, 1930; London: Routledge 1992.

[24] Vega-Redondo, F., "Competition and Culture in an Evolutionary Process of Equilibrium Selection: A Simple Example," *Games and Economic Behavior*, 5, 1993, 618-631.

[25] Wilhelm, M. O., "Bequest Behavior and the Effect of Heirs' Earnings," *American Economic Review*, 86, 1996, 874-892.

8 Appendix

Proof of Proposition 1: $I \in (\hat{I}, w^h/\alpha)$ implies that $r^l > 0, r^h = 0$ and $s > 0$. Differentiating (10) with respect to I, for this case yields,

$$\frac{\partial s}{\partial I} = \frac{\alpha I + w^l}{\alpha I(I + w^l)} > 0.$$

Similarly, the effect of changes in α on s is given by,

$$\frac{\partial s}{\partial \alpha} = \frac{1}{\alpha^2}\left[\frac{2\alpha}{1+\alpha} - \ln \tilde{c}_p\right] > \frac{1}{\alpha^2}\left[\frac{2\alpha}{1+\alpha} - \ln(1+\alpha)\right] > 0$$

for $\alpha \in [0, 1]$. The effects of changes in wages on s are

$$\frac{\partial s}{\partial w^h} = -\frac{1}{w^h} < 0 \qquad \frac{\partial s}{\partial w^l} = -\frac{1-a}{\alpha(I + w^l)} < 0.$$

If $I > w^h/\alpha$ then $r^l > 0, r^h > 0$ and $\tilde{c} = \tilde{c}_p = \tilde{c}_k = (I + w^h)/(I + w^l)$. Hence, $s = (1-\alpha)/\alpha \ln \tilde{c} > 0$ and it follows that s decreases in I, α and w^l but increases in w^h.

Proof of Proposition 2: For $I \in (w^l/\alpha, \hat{I})$, when $r^l > 0, r^h = 0$ and $s = 0$, the effects of changes in I, α, w^h and w^l on p are determined implicitly from expression (6):

$$\begin{array}{ll} \frac{\partial p}{\partial I} = -\frac{1}{v''(p)}\frac{1}{I+w^l} < 0 & \frac{\partial p}{\partial \alpha} = -\frac{1}{v''(p)}\frac{1}{\alpha(1+\alpha)} < 0 \\ \frac{\partial p}{\partial w^h} = \frac{1}{v''(p)}\frac{1}{w^h} > 0 & \frac{\partial p}{\partial w^l} = -\frac{1}{v''(p)}\frac{1}{I+w^l} < 0. \end{array}$$

Similarly, for $I \in (\hat{I}, w^h/\alpha)$, when $r^l > 0, r^h = 0$ and $s > 0$, the effects are determined implicitly from expression (9):

$$\begin{array}{ll} \frac{\partial p}{\partial I} = \frac{1}{\alpha v''(p)}\frac{w^l}{I(I+w^l)} > 0 & \frac{\partial p}{\partial \alpha} = \frac{1}{\alpha v''(p)}\left[\frac{1}{1+\alpha} - \frac{q}{1-p}\right] 0 \\ \frac{\partial p}{\partial w^h} = 0 & \frac{\partial p}{\partial w^l} = -\frac{1}{\alpha v''(p)}\frac{1}{I+w^l} < 0. \end{array}$$

Finally, for the case $I > w^h/\alpha$, when $r^l > 0, r^h > 0$, expression (9) collapses into $\ln(I + w^h)/(I + w^l) - \alpha q/(1-p)$. Thus, p decreases in I, α and w^l but increases in w^h.

For all cases, a higher q has an unambiguously negative effect on p equal to $-1/(v''(p)(1-p))$. The effect on effort costs is twofold. First, a higher q increases the cost of maintaining the current p. Second, individuals adjust

their choice of p accordingly. The net effect is given by:

$$\frac{dv(p)}{dq} = -\ln(1-p) - \frac{1}{v''(p)(1-p)}\frac{q}{1-p} = -\ln(1-p) - 1.$$

The effect on the effort cost can be either positive or negative.

Proof of Proposition 3: First we examine how p depends on π. If $s > 0$ then p is determined by (9) and the relevant consumption ratio is $\tilde{c}_p(t,\pi)$. If $s = 0$then p is determined by (6) and the relevant consumption ratio is $\tilde{c}_k(t,\pi)$. The consumption ratios are given by:

$$\tilde{c}_p(t,\pi)|_{s>0} = \begin{cases} \frac{(1+\alpha)I}{I+w^l+t\frac{\pi}{1-\pi}w^h} & \text{if } r(w^l)>0 \quad r(w^h)=0 \\ \frac{I+(1-t)w^h}{I+w^l+t\frac{\pi}{1-\pi}w^h} & \text{if } r(w^l)>0 \quad r(w^h)>0 \end{cases}$$

$$\tilde{c}_k(t,\pi)|_{s=0} = \begin{cases} \frac{(1-t)w^h}{w^l+t\frac{\pi}{1-\pi}w^h} & \text{if } r(w^l)=0 \quad r(w^h)=0 \\ \frac{1+\alpha}{\alpha}\frac{(1-t)w^h}{I+w^l+t\frac{\pi}{1-\pi}w^h} & \text{if } r(w^l)>0 \quad r(w^h)=0. \end{cases}$$

Both $\tilde{c}_p(t,\pi)$ and $\tilde{c}_k(t,\pi)$ decrease strictly in π and t. Hence, we can express the child's choice of p as a continuous decreasing function of π: $p(\pi)$, where $p'(\pi) < 0$ for $p(\pi) > 0$. If families are identical then the p for each child equals the aggregate success probability, i.e., $\pi = p(\pi)$. Thus there is a unique fixed point, which is greater than 0 if $p(0) > 0$. If families differ $p_i(\pi)$ denotes the optimal p for a child of type i . As before $p_i(\pi)$ is continuous in π and $p_i'(\pi) \leq 0$ and the inequality is strict if $p_i(\pi) > 0$. The equilibrium condition is then $\pi = \sum_{i\in N}\eta_i p_i(\pi)$, where N is the set of types andη_i is the frequency of type i in the population. Since the right-hand side decreases in π, the fixed point is unique.

Proof of Proposition 4: As noted above $\tilde{c}_p(t,\pi)$ and $\tilde{c}_k(t,\pi)$ strictly decrease in t. Thus it follows from conditions (6) and (9) that, for a given π, an individual's p decreases in t , and strictly so for $p > 0$. That is, $p(\pi)$ shifts downward (for π st $p(\pi) > 0$) which implies that the equilibrium π decreases in t. The effect of a higher q is similar to that of a higher t in that an increased cost of effort leads to a downward shift of $p(\pi)$. Consequently, π also decreases in q.

The effect of t on s depends on r^h. If $r^h > 0$, then $\tilde{c}_p(t,\pi) = \tilde{c}_k(t,\pi) = \tilde{c}(t,\pi)$ and s strictly decreases in t. (An increase in t leads to a lower π via a lower $\tilde{c}$. The reduction in π moderates the fall in $\tilde{c}$ but cannot outweigh the direct effect via t. A higher $\tilde{c}$ for everyone implies a higher, not a lower, π .) An increase in q affects s via π and thus leads to higher s for $r^h > 0$. If

$r^h = 0$, then the effects of t and q depend on the relative impact on $\tilde{c}_p(t, \pi)$ and $\tilde{c}_k(t, \pi)$ and cannot be signed.

Proof of Proposition 5: The effect of a change in π on p, taking t and B as given, can be derived implicitly from condition (11): $\partial p/\partial \pi = \bar{s}(1-p)^2/q$. This is non-zero only for families choosing $\bar{s} > 0$ when the effect is,

$$\frac{\partial p}{\partial \pi} = \frac{1-p}{\pi}\left(1 - \frac{\alpha \ln \tilde{c}_k}{\ln \tilde{c}_p}\right)$$

where the last factor is less than one. If $p > 0.5$ for all children, then $\pi > 0.5$. Thus $\partial p/\partial \pi < 1$ which ensures stability.